

- 54 -

What is claimed is:

1. A method of reducing serum levels of triglycerides and/or VLDL comprising administering a therapeutically effective amount of an autophagocytosis inducing compound to a patient in need thereof.
2. The method according to claim 1, wherein the autophagocytosis inducing compound is selected from a group consisting of: Map1LC3, GABARAP, GATE16, and Class III P13'kinase.
3. Use of an autophagocytosis inducing compound for preparing a medicament useful for reducing serum levels of triglycerides and/or cholesterol.
4. The use according to claim 3, wherein the autophagocytosis inducing compound is selected from a group consisting of: Map1LC3, GABARAP, GATE16, and Class III P13'kinase.
5. A method of treating or preventing a disorder selected from a group consisting of: hypertriglyceridemia, hyperlipidemia, hypercholesterolemia, hyperlipoproteinemia, atherosclerosis, arteriosclerosis, peripheral artery disease, coronary artery disease, congestive heart failure, myocardial ischemia, myocardial infarction, ischemic stroke, hemorrhagic stroke, restinosis, diabetes, insulin resistance, metabolic syndrome, renal disease, hemodialysis, glycogen storage disease type I, polycystic ovary syndrome, secondary hypertriglyceridemia, or combination thereof comprising administering a therapeutically effective amount of an autophagocytosis inducing compound to a patient in need thereof.
6. The method according to claim 5, wherein the autophagocytosis inducing compound is selected from a group consisting of: Map1LC3, GABARAP, GATE16, and Class III P13'kinase.
7. Use of an autophagocytosis inducing compound for the preparation of a medicament useful for treating or preventing a disorder selected from a group consisting of: hypertriglyceridemia, hyperlipidemia, hypercholesterolemia, hyperlipoproteinemia, hypertriglyceridemia, hyperlipidemia,

- 55 -

hypercholesterolemia, hyperlipoproteinemia, atherosclerosis, arteriosclerosis, peripheral artery disease, coronary artery disease, congestive heart failure, myocardial ischemia, myocardial infarction, ischemic stroke, hemorrhagic stroke, restinosis, diabetes, insulin resistance, metabolic syndrome, renal disease, hemodialysis, glycogen storage disease type I, polycystic ovary syndrome, secondary hypertriglyceridemia, or a combination thereof.

8. The use according to claim 7, wherein the wherein the autophagocytosis inducing compound is selected from a group consisting of: Map1LC3, GABARAP, GATE16, and Class III P13'kinase.

9. A method of identifying autophagocystosis modulating compounds comprising:

- (a) providing a control cell culture system and a test cell culture system;
- (b) administering a test compound to cells in said test cell culture system; and
- (c) assaying for autophagocytosis markers in said control cell culture system and said test cell culture system;

wherein an abnormal value for said autophagocytosis markers in said test cell culture system as compared to said control cell culture system indicates that the test compound modulates autophagocytosis.

10. A method as claimed in claim 9, wherein said autophagocytosis markers are VLDL and VLDL precursors in ER and Golgi cell fractions.

11. The method according to claim 10, wherein the VLDL precursors are PC moiety containing lipids.

12. The method according to claim 11, wherein the PC moiety containing lipid is 18:1(n-9) PC.

- 56 -

13. The method according to claim 10, wherein the VLDL precursors are PE moiety containing lipids.

14. The method according to claim 13, wherein the PE moiety containing lipid is 20:5(n-3) PE.

15. A method as claimed in claim 9, wherein said autophagocytosis markers are determined by detecting the degree of co-localization of apoB100 and Map1LC3 by immunofluorescence.

16. A method of identifying autophagocytosis inducing compounds comprising:

(a) providing a control cell culture system and a test cell culture system;

(b) administering a test compound to cells in said test cell culture system; and

(c) assaying for autophagocytosis markers in said control cell culture system and said test cell culture system;

wherein an abnormal value for said autophagocytosis markers in said test cell culture system as compared to said control cell culture system indicates that the test compound modulates autophagocytosis.

17. A method as claimed in claim 16, wherein said autophagocytosis markers are PC moiety containing lipids and PE moiety containing lipids in ER and Golgi cell fractions.

18. The method according to claim 17, wherein the PC moiety containing lipid is 18:1(n-9) PC.

19. The method according to claim 17, wherein the PE moiety containing lipid is 20:5(n-3) PE.

20. A method as claimed in claim 16, wherein said autophagocytosis markers are determined by detecting the degree of co-localization of apoB100 and Map1LC3 by immunofluorescence.
21. The method according to any one of claims 9 to 20, wherein the cells are hepatocytes or hepatoma cells.
22. The method according to claim 21, wherein the hepatocytes are rat hepatocytes which express human apoB100.
23. The method according to claim 21, wherein the hepatoma cells are rat hepatoma cells which express human apoB100.
24. The method according to claim 23, wherein the rat hepatoma cells are McA-RH-7777 cells.
25. The method according to claim 22 or 23 wherein the apoB100 protein is fused with a tag.
26. The method according to claim 25, wherein the tag is a fluorescent protein.
27. The method according to claim 25, wherein the tag is tetra-cysteine having the sequence Cys-Cys-X-X-Cys-Cys, wherein X is any amino acid.
28. Use of an autophagocytosis inducing compound identified by any one of claims 16 to 27, for preparing a medicament useful for reducing serum levels of triglycerides and/or VLDLs.
29. A pharmaceutical composition comprising an autophagocytosis inducing compound identified by the method of any one of claims 16 to 27 and a pharmaceutically acceptable carrier.
30. A method of treating or preventing a disorder selected from a group consisting of: hypertriglyceridemia, hyperlipidemia, hypercholesterolemia, hyperlipoproteinemia, atherosclerosis, arteriosclerosis, peripheral artery disease, coronary artery disease, congestive heart failure, myocardial ischemia,

- 58 -

myocardial infarction, ischemic stroke, hemorrhagic stroke, restinosis, diabetes, insulin resistance, metabolic syndrome, renal disease, hemodialysis, glycogen storage disease type I, polycystic ovary syndrome, secondary hypertriglyceridemia, or combination thereof comprising administering a therapeutically effective amount of the pharmaceutical composition according to claim 25 to a patient in need thereof.